DELAWARE CENTER FOR THE INLAND BAYS

Inland Bays Journal

WINTER 2017

How are the Bays doing?

When the first comprehensive State of the Inland Bays Report was released five years ago, the Bays were showing some signs of recovery. That trend has continued, but overall water quality in the Inland Bays remains fair to poor. We're working for the day when the signs that warn against swimming in bay waters can be taken down, when many of the areas closed to clamming can be reopened, and when bay grass beds come back.

THE PRESSURES ON THE BAYS HAVE INCREASED AND CHANGED OVER THE LAST TWO DECADES, but the two most significant threats to the Inland Bays and the land around them are the same: nutrient pollution and loss of habitat. Nutrient pollution from excess nitrogen and phosphorus is still causing algae blooms, murky waters and low oxygen, creating conditions that are detrimental to aquatic life and public health. The loss and fragmentation of forests, wetlands and fields that provide safe harbor for native plants and animals, also threatens water quality and impacts quality of life.

WHAT NEEDS TO HAPPEN TO IMPROVE THE STATE OF THE BAYS? How do we accommodate growth and change while protecting the beauty and health of the Inland Bays? At a meeting in Rehoboth Beach in November 2016, urban planner Ed McMahon said, "No place will stay special by accident but must grow by choice, not by chance. *(cont. page 2)*

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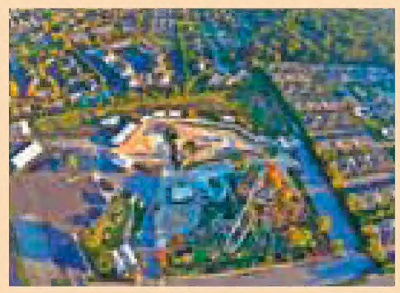
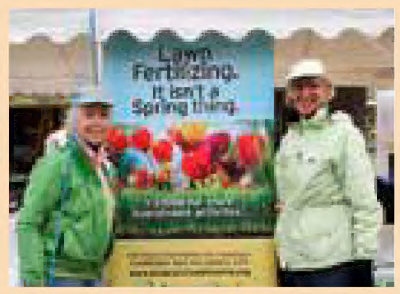


State of the Inland Bays Summary, see pages 4–5.



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The Inland Bays Journal is a publication of the Delaware Center for the Inland Bays. The CIB is a nonprofit organization and a National Estuary Program. The purpose of the Inland Bays Journal is to educate and inform citizens and visitors to the Inland Bays watershed about this "estuary of national significance."

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Cover photo credit: Marianne Walch

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How do we get from here to there?

Working together to ensure a cleaner future for the Inland Bays.

Some of you were born here, but many who live around the Inland Bays came from Philadelphia, Baltimore and Washington...cities where a letter to the editor or a visit to a legislator may go unnoticed.

Things are different here. You can meet one of your legislators for coffee almost any week, see your letter to the editor published in the local papers, and easily provide comment on bills at Legislative Hall in Dover.

Clean water in the Inland Bays is only possible if the people who live here expect it—and let the elected officials in their towns, county, and state legislature know that they believe that clean water is a public health and economic necessity.

The Bays need advocates to attend public input meetings, write letters, and meet with legislators and council people to communicate support for policies and decisions that promote clean water.

To restore the waters of the Inland Bays, action is needed:

- **Legislation that provides funding for the clean water that Delawareans have said they want, cleanwaterdelaware.org.**
- **Public policy that advances the objectives of our roadmap to clean water: the Inland Bays Comprehensive Conservation and Management Plan, inlandbays.org/comp-plan.**
- **Public participation in the creation of the 2018 Sussex County Comprehensive Plan—this presents a timely and critical opportunity to create a plan that better protects our Bays as the watershed population grows—that protects the quality of life, public health, and natural resources that are the bounty of healthy Inland Bays, sussexplan.com.**

CIB MISSION

To preserve, protect and restore Delaware's Inland Bays, the water that flows into them, and the watershed around them.

THE INLAND BAYS WATERSHED—QUICK FACTS

Located in south coastal Delaware, the three Bays—Rehoboth Bay, Indian River Bay and Little Assawoman Bay, are coastal lagoons behind a narrow barrier island that separates them from the Atlantic Ocean. Saltmarshes, tidal flats, sandy beaches, islands and winding creeks make up this diverse environment.

- The watershed of the Inland Bays is **292 square miles** of land that drains to 35 square miles of bays and tidal tributaries. The Bays are shallow, generally less than seven feet, and have an average tidal range of three feet.
- Rehoboth Bay and Indian River Bay are **tidally connected** to the Atlantic Ocean by the Indian River Inlet. Little Assawoman Bay is connected to the ocean by the Ocean City Inlet, located ten miles to the south in Maryland.
- **112 species of finfish and 40 species of shellfish** can be found in the Bays, attracting more than 200 thousand recreational fishing trips each year on the Inland Bays.
- Popular with birdwatchers, the Bays are a **critical stopover** for migratory birds on the Atlantic flyway.
- The beauty and productivity of this estuary now supports a thriving human culture and economy, with a year round **population of 89,121 that more than doubles** at the peak of the summer season. Prior to European settlement, the shores surrounding the Inland Bays were inhabited by members of the Nanticoke Tribe and their early ancestors.
- In 1988, the Delaware Inland Bays were declared "an estuary of national significance" by the U.S. Congress and became **one of the 28 members** of the National Estuary Program.

Love Creek flowing east to Rehoboth Bay. The Bays are unique places where 'the rivers meet the sea'—where freshwater flowing from the land and down tributaries mixes with seawater that flows through inlets carved into barrier islands. Photo by TJ Redefer

EVERY FIVE YEARS,

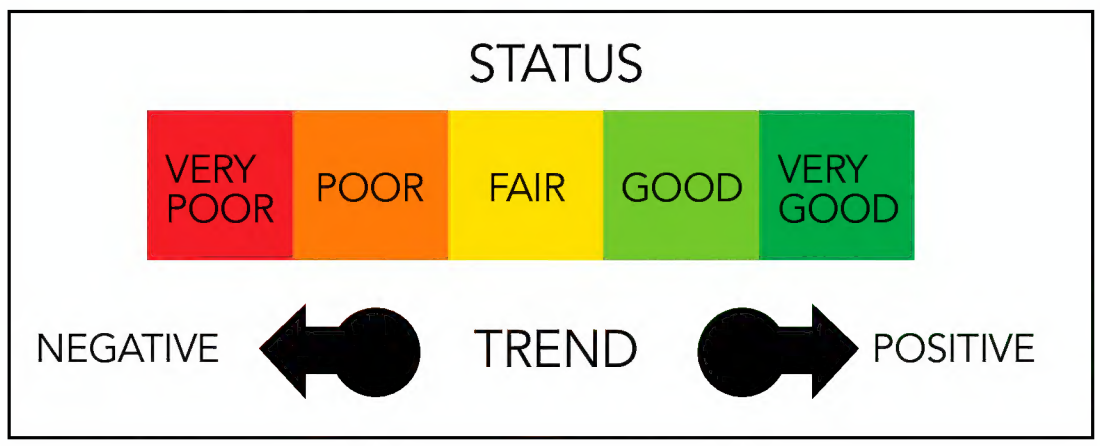
the Delaware Center for the Inland Bays, working with research partners, produces a State of the Inland Bays Report to provide communities, decision makers, and concerned citizens with scientific information they can use to help restore and protect the Bays.

To assess the health of the Inland Bays, 35 environmental indicators were selected. Each of these indicators is a species or a condition that was chosen because it can be measured consistently over a long time period, and can tell us something useful about how the Bays are changing and how much progress has been made toward restoration goals.

The State of the Inland Bays —In Summary

To view the complete 2016 State of the Bays report, visit inlandbays.org/report2016.

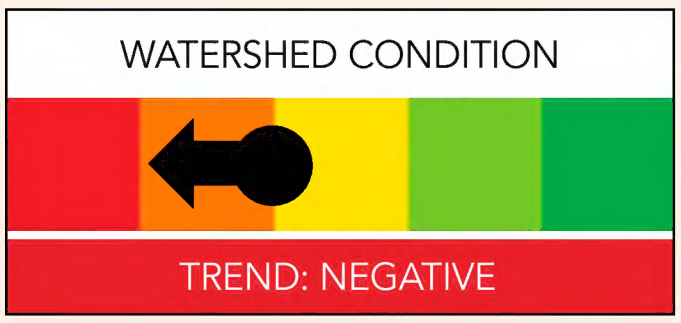
The 35 environmental indicators used in this report are grouped by subject area into the six sections outlined below.



HOW TO READ THE STATUS BAR

The current status is shown with a round, black dot on the status bar. The farther to the left the dot is, the more negative the status of the group of indicators; the farther to the right, the more positive the status. A trend arrow pointing to the left indicates a negative trend; pointing to the right indicates a positive trend. No arrow indicates a neutral or unknown trend.

Land use is changing—important because different land uses deliver different types and amounts of pollutants to waterways.



Development driven by rapid population growth is increasing the acreage of impervious surface coverage, adding to urban pollution sources, and stressing habitats. Agricultural pollution is decreasing as land uses change. Increased flushing at the inlet has improved water quality in open bay waters.

Population growth is driving many of the changes that are impacting the Inland Bays. The year-round population more than doubled between 1990 and 2010, and is expected to increase by another 46% by 2040.

Agriculture is still the largest land use in our watershed. But since 1992, the area of agricultural land has decreased by 15.6% and acreage of developed land has increased by 75%. Forested areas also are disappearing and indicators show that the preservation of natural habitat areas has stalled in the past five years.

With development comes impervious surfaces. Parking lots, roadways and roofs now cover over 10% of the watershed's land area—a point at which studies indicate detrimental impacts to water quality. Some more densely developed communities exceed 50% impervious surface. These impervious surfaces prevent rainwater from soaking into the ground, and act as a conduit carrying polluted stormwater runoff into waterways.

Too many nutrients are not nutritious for the Bays—they result in algae blooms, murky waters, and extreme fluctuations in dissolved oxygen that harm aquatic life.

The remaining two point sources of nutrients should soon be removed from the Bays. Nonpoint source pollution remains above healthy limits. Septic conversions to central sewer have exceeded goals set in the Pollution Control Strategy, but other management progress has stagnated since 2011.

Nutrient pollution remains the number one problem for the Inland Bays, but the nutrient management indicators are showing some good trends. Since the 1990s, we've seen significant decreases in the amount of nitrogen and phosphorus entering the Bays from point sources (that is, a source that's an actual pipe, such as a wastewater treatment plant).

Of the 13 original 'point source' discharges to the Bays, only two remain: Rehoboth Wastewater Treatment Plant discharge, which is scheduled to be removed from the bay in 2018, and the Allen Harim facility near Indian River. The town of Millsboro removed its wastewater discharge from Indian River in 2015.

'Nonpoint' source pollution entering the Bays in groundwater and surface runoff is the largest source of nutrient pollution to the Bays. Inputs of nitrogen from nonpoint sources far exceed goals set by the state. In a positive trend, more than 6,800 homes on septic systems were connected to central sewer since 2011, but so far, voluntary actions to reduce nutrient pollution from agriculture and stormwater show little progress, highlighting the need for dedicated funding.

Future water quality improvements will depend upon reducing the amount of nutrient pollution entering the Bays.

Water quality is improving in Little Assawoman Bay and in open waters near the Indian River Inlet. Algae and seaweed blooms have improved in some areas, but tributaries and canals are still murky and oxygen-starved.

Water quality improvements are being seen near the Indian River Inlet and in Little Assawoman Bay.

Most tributaries and canals continue to have poor water quality and unhealthy levels of dissolved oxygen.

Eelgrass, a species sensitive to poor water quality, is almost non-existent in the Inland Bays. Neighboring coastal bays in Maryland and New Jersey support thousands of acres of eelgrass. Although seaweed abundance is down compared to the 1990s, blooms still occur. Overall, water clarity and dissolved oxygen have not improved significantly over the long term.

Since our 2011 Report, Living Resources indicators continue to present a mixed picture.

Bald eagles and ospreys are commonly seen around the Bays. Clams and some fish populations are stable. Other species such as Blue crabs and waterfowl have declined. Oysters and bay grasses are rare in the Bays.

Changes in the abundance of birds, fish and shellfish are often the most easily observed signs of environmental stress. As the watershed urbanizes, loss of wetlands and natural shorelines impact both migrating and resident animal populations.

Numbers of bald eagle and osprey nests in the watershed have increased by at least 30% since our last report. But two of our winter waterfowl indicators—Canvasback Ducks and Brant—continued to decline over the past five years, despite stable numbers along the Atlantic Flyway as a whole. These declines may point to changes in local wetland habitats, as well as the lack of bay grasses in our Bays that are important food sources for waterfowl such as Brant.

Abundances of most fish species showed little change. Blue crab populations remain low. Hard clam populations have been stable since the 1970s.

Contact with bay waters continues to pose health risks for recreational users.

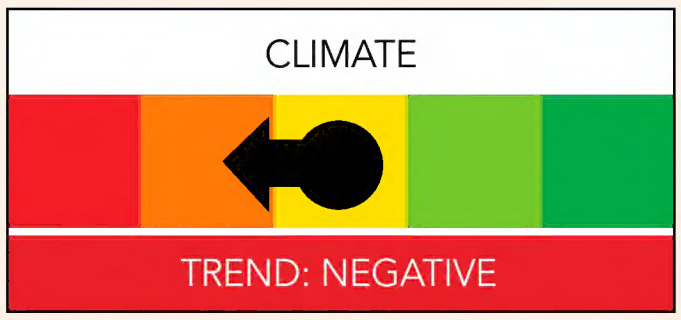
Most tributaries and canals are unsafe for swimming or for the harvest of shellfish. Consumption advisories for striped bass and bluefish caught in the Bays remain in effect.

The open waters of the Inland Bays are generally safe for recreational contact such as swimming, however, most tributaries and canals regularly fail to meet safe swimming standards. This is unchanged since the previous report.

Pathogens—illness-causing bacteria, viruses, and parasites—can enter the water from many sources, including malfunctioning septic systems, manure, pet waste, sewage from boats and stormwater runoff. Some naturally occurring bacteria can also pose health risks, particularly to those with compromised immune systems.

Currently 61% of the Inland Bays are approved for year-round shellfishing—down 1% since the previous report. An additional 3.6% of bay waters were downgraded from seasonally-approved to prohibited.

The Inland Bays are already experiencing effects from sea level rise, including increased flooding, shoreline erosion, and drowning of tidal wetlands.



Sea level rise and warming temperatures are a growing challenge for watershed communities, residents and bay ecosystems. Increased flooding and wetland loss can be expected.

A combination of land subsidence and very low elevation makes our watershed particularly vulnerable to the effects of sea level rise.

Global emissions of carbon dioxide are causing higher air temperatures, a longer growing season, rising sea levels and warmer bays. Over time, we may see changes in the species of fish and birds that use the estuary as conditions favor those that prefer or tolerate warmer weather.

Climate models suggest that the average summer air temperature in southern Delaware could increase eight degrees Fahrenheit by the end of the century. Sea level in Delaware is now rising at a rate of 1.1 feet per century and is projected to increase to nearly five feet by 2100.

BECOME A FRIEND OF THE BAYS

Contribute financially to the CIB. As a not-for-profit organization, the CIB relies on varied sources of revenue—including private donations.

Volunteer for the Bays—be a citizen scientist, plant trees to restore forests, grow oysters, help with community outreach, lend us your special skills and experience.

Keep up with news of the Inland Bays! Follow us on Facebook, Twitter (@deinlandbays), Instagram (deinlandbays), and YouTube. Visit us at inlandbays.org

THE BAYS NEED ADVOCATES

Make your voice heard! Write letters and meet with legislators and council people to communicate your support for policies and decisions that protect and restore the Inland Bays and their watershed.

Work together for the Bays. Attend Citizen's Advisory Committee meetings. Learn more at inlandbays.org/cac. Start an environmental committee for your homeowners association.

Invite speakers from the CIB to present to your civic association, church or homeowners group.

BEING 'BAY-FRIENDLY' BEGINS AT HOME

Converting septic systems to central sewer provides a much higher level of sewage treatment. If you are not already hooked up to central sewer, discuss a possible switch with your homeowners association or community group. Until then, maintain your septic system regularly by having your septic tank pumped out as frequently as needed for the condition of your system—but at least every 3 years.

Go native! Native plants are adapted to our climate and soils so they don't require as much water, fertilizer, or pest control to maintain. This means less polluted runoff into the Bays. Come to the CIB's Gardening for the Bays Native Plant Sale to get tips...and plants! inlandbays.org/plantsale

Make your yard an oasis for native pollinators-like butterflies. You can even have it listed as a Certified Wildlife Habitat by providing food, water and cover for birds, butterflies and other natives. Pollinators are essential to both agriculture and home gardens.

Use fertilizer sparingly (or not at all). Fertilizer=Nutrients—the #1 problem for the Bays. If you must use fertilizer, learn how and when to apply at delawarelivablelawns.org.

Control erosion on your property with plantings to keep soil out of streets and storm drains that empty into streams and bays.

Photo credit: Andrew McGowan

If you live on the water—a creek, pond or bay—**plant or maintain a buffer** of trees and shrubs at the edge of the water to slow down and filter the stormwater runoff.

Pick up after your pets. Dog waste is not just dirty, it's teeming with bacteria—23 million fecal coliform bacteria in a single gram of pet waste. The nutrients in dog waste are bad for your lawn and bad for the Bays.

ACT LOCALLY FOR CLIMATE CHANGE

Too big for you to make a difference? Not true! Buy renewable energy if you can, drive and fly less, make your home more energy efficient, plant trees, and reduce, reuse and recycle.

Support the protection of wetlands in your community—they are the sponges that can hold more than a million gallons of water per acre during storm events to protect against local flooding.

If you or your community is on the water—**Consider installing a "living shoreline"**: a method of stabilizing shorelines to protect against erosion while maintaining the beauty and habitat of a natural shoreline. These are the shock absorbers that protect homes and communities from wind-driven waves during storms. inlandbays.org/livingshorelines

LEND A HAND TO PROTECT ANIMALS AND THE PLACES THEY LIVE

Support funding for the protection of open space so that birds, turtles, frogs and other native animals have the natural habitat they need to live.

Dispose of fishing line carefully; it can be deadly to birds and marine life. Make sure your crab pots have an 'excluder' so they don't become death traps to terrapins. Use reusable grocery bags; plastic bags can be deadly to marine life.

For more ideas on actions you can take, visit inlandbays.org/baytips.

HELP PLAN A BETTER FUTURE FOR THE INLAND BAYS AND THE PEOPLE WHO LIVE HERE!

The 2018 Sussex County Comprehensive Plan is being developed. Attend the public input meetings and go to sussexplan.com to give your suggestions and voice your concerns about open space, water quality and other issues that will guide growth and actions in the coming decades. Learn more at inlandbays.org/sussex-plan.

DELAWARE CENTER FOR THE
INLAND BAYS
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